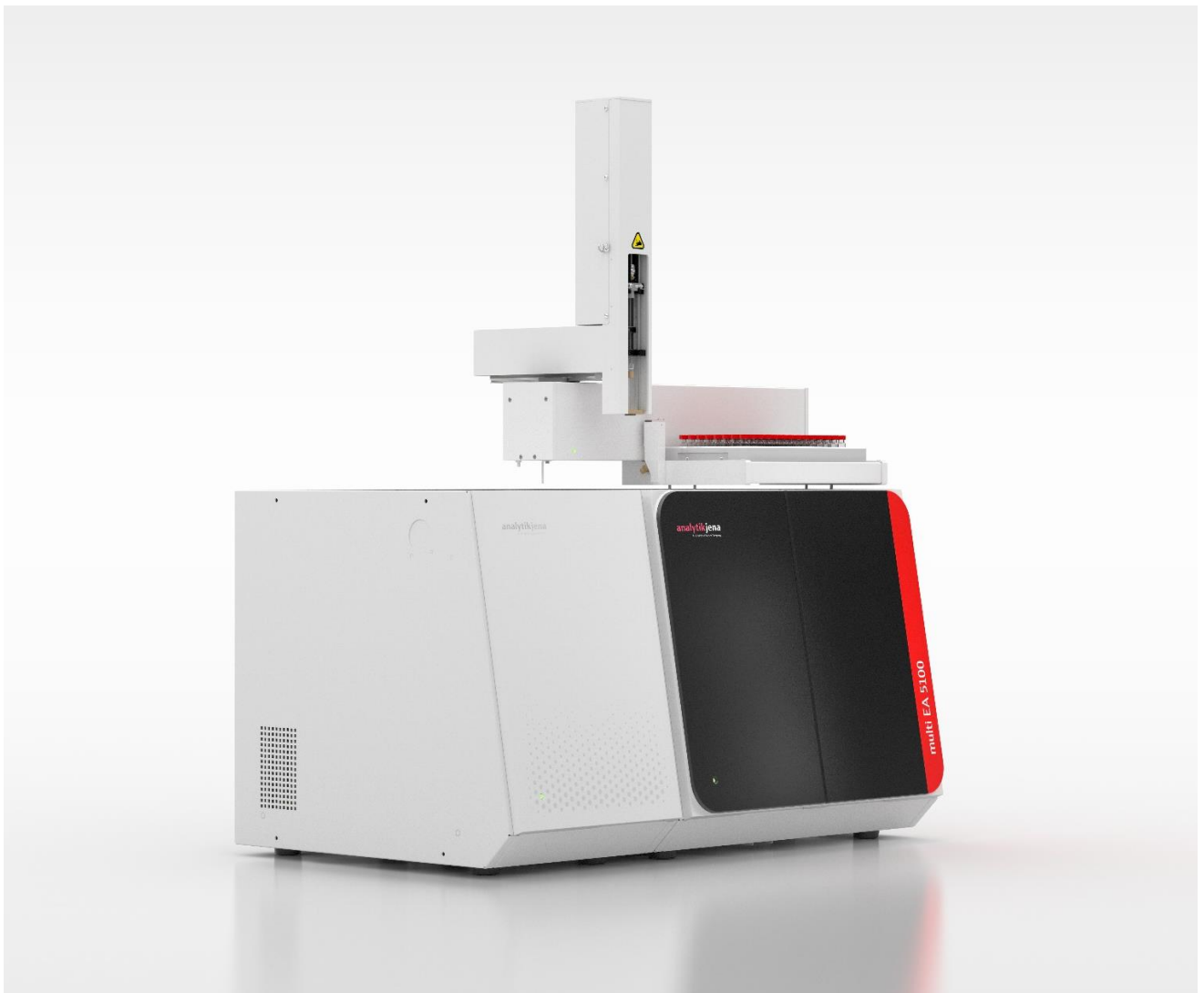


multi EA 5100 C/N/S/X Elemental Analyzer



Technical Data

C/N/S/X Elemental Analyzer multi EA 5100

General

- Multi-matrix analyzer for liquids, solids, gases
- Multi-element analysis, determination of carbon, nitrogen, sulfur and chlorine in one analysis cycle, no system refitting required
- Easy to use, a library with preset standard compliant methods simplifies work and saves valuable analysis time
- Outstanding robustness and sensitivity combined with best service and cost-effective 24/7 high-throughput analysis

Options

	Carbon	Nitrogen	Sulfur	Sulfur	Chlorine
Measuring principle	NDIR Spectrometry	Chemo-luminescence	UV Fluorescence	Coulometry	Coulometry
Operation range (relative)	100 wt-% (organics) 10,000 mg/L (water)	10,000 mg/L	10,000 mg/L	40,000 mg/L	100,000 mg/L
Operation range (absolute)	500 mg C	100 µg N	100 µg S	200 µg S	1.00 mg Cl
Limit of detection (relative)	100 µg/L (organics) 200 µg/L (water)	10 µg/L	5 µg/L	600 µg/L	50 µg/L ("high sensitive")
Limit of detection (absolute)	50 ng C (organics) 100 ng C (water)	0.4 ng N	0.2 ng S	0.2 µg S	10 ng Cl ("high sensitive")

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Standard Compliance

Element	Parameter	Parameter
Carbon (by NDIR)	TC, TOC, TIC, NPOC, EC, OC	<ul style="list-style-type: none"> ▪ VDI 2465 part 2 (NDIR, elemental carbon/organic carbon in soot, particulate emission) ▪ ISO 8245 (TOC, DOC, water) ▪ DIN EN 1484 (NDIR, TOC/DOC, water)
Sulfur (by UVFD)	TS	<ul style="list-style-type: none"> ▪ ASTM D5453 (UVFD, light hydrocarbons, fuels, oils) ▪ ASTM D6667 (UVFD, LPG, gaseous hydrocarbons) ▪ DIN EN 17178 (UVFD, LPG) ▪ ASTM D7183 (UVFD, aromatic hydrocarbons) ▪ ASTM D7551 (UVFD, gaseous hydrocarbons, LPG & NG) ▪ DIN EN 15486 (UVFD, ethanol) ▪ DIN EN ISO 20846 (UVFD, petroleum products) ▪ GOST R EN ISO 20846 (UVFD, petroleum products) ▪ JIS K 2541-06 (UVFD, crude oil and petroleum products) ▪ SH/T 0689 (UVFD, light hydrocarbons, motor fuel & oils) ▪ UOP 987-Part A (UVFD, very volatile liquid hydrocarbons)
Sulfur (by coulometry)	TS	<ul style="list-style-type: none"> ▪ ASTM D3120 (Coulometry, light petroleum hydrocarbons) ▪ ASTM D3246 (Coulometry, LPG) ▪ DIN EN ISO 16591 (Coulometry, petroleum products) ▪ JIS K 2541-02 (Coulometry, crude oil and petroleum products) ▪ JIS K 2240 (Coulometry, LPG) ▪ JPI-55-20-82 (Coulometry, light oil and petroleum products) ▪ SH/T 0253 (Coulometry, liquid petroleum products)
Nitrogen (by CLD)	TN	<ul style="list-style-type: none"> ▪ ASTM D5762 (CLD, horizontal operation mode, petroleum products) ▪ ASTM D4629 / IP 379/88 (CLD, trace contents, liquid petroleum hydrocarbons) ▪ ASTM D6069 (CLD, aromatic hydrocarbons) ▪ ASTM D7184 (CLD, ultra-traces, aromatic hydrocarbons) ▪ DIN 51444 (CLD, petroleum products) ▪ JIS K 2609 (CLD, crude oil and petroleum products) ▪ UOP 936 (CLD, LPG) ▪ UOP 971 (CLD, light aromatic hydrocarbons) ▪ UOP 981 (CLD, very volatile liquid hydrocarbons)

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Chlorine (by coulometry)	TX, TOX, TCI	<ul style="list-style-type: none"> ▪ ASTM D5808 (TCI, aromatic hydrocarbons) ▪ ASTM D4929 Method B (TOX, crude oil) ▪ ASTM D7457 (TCI, aromatic hydrocarbons) ▪ IP 9076 / EPA 9076 (TCI, new and used petroleum products) ▪ DIN EN 14077 (TX, petroleum products) ▪ DIN 51408-2 (TX, mineral oil hydrocarbons) ▪ UOP 779 (TX, petroleum products) ▪ UOP 910 (TX, LPG and gases) ▪ GB/T 18612 (TOX, crude oil)
Halogens (by coulometry)	AOX/TOX, EOX	<ul style="list-style-type: none"> ▪ EPA 9020 B (AOX, drinking and ground water) ▪ EPA 1650B, EPA 450.1, SM 5320 B (DOX in water) ▪ DIN EN ISO 9562 (AOX, water) ▪ DIN EN 16166 (AOX, sludge, soil, bio waste) ▪ OENORM EN 15171 (AOX, sludge) ▪ DIN 38409-H22 (SPE-AOX, water) ▪ DIN 38414-S18 (AOX, sludge and sediments) ▪ EPA 9023 (EOX, solids) ▪ DIN 38414-S17 (EOX, sludge and sediments) ▪ OENORM M 6614 (EOX, water) ▪ NEN 6402 (EOX, water)

Accessories for Sample Introduction

Liquids	<p>Semi-automatic: Autoinjector AI (vertical / horizontal) and AI-EA (vertical) ABD Automatic Boat Drive (horizontal)</p> <p>Automatic: MMS 5100 resp. MMS-T Multi-Matrix Sampler (vertical) ABD Automatic Boat Drive + MMS 5100 resp. MMS-T Multi-Matrix Sampler (horizontal)</p>
Gases	<p>Gaseous, expanded: GSS Gas Sampling System</p> <p>Gaseous, compressed: GSS Gas Sampling System with adapter box or GSS/LPG combi module</p> <p>Pressurized liquefied gases: LPG 2.0 module or GSS/LPG combi module</p>
Solids	<p>Semi-automatic: ABD Automatic Boat Drive (horizontal)</p> <p>Automatic: ABD Automatic Boat Drive + MMS 5100 resp. MMS-T Multi-Matrix Sampler (horizontal)</p>

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Sample Digestion

Furnace temperature	≤ 1,100 °C
Sample quantities	
liquids	1 – 500 µL
solids	0.1 – 110 mg
gases	1 – 100 mL
LPG	1 – 50 µL
Power supply	100 – 240 VAC, 50/60 Hz, max. 16 A
Gas supply	Argon 99.996 % (4.6), Oxygen 99.995 % (4.5) (both, free of halogens and hydrocarbons)
Measuring time	Approx. 3 – 5 min (V) C/N/S, 3 – 8 min C/N/S (H) and Cl (V/H)

Control and Data Evaluation

Control	PC
Control and analysis software	multiWin 5.X
Operating system	Windows 7 (32 or 64 Bit) or higher
Minimum requirements PC	<ul style="list-style-type: none"> ▪ Desktop PC, tower or laptop ▪ Intel Pentium 4 ▪ 2 GB RAM, 20 GB HDD ▪ CD ROM drive ▪ Interfaces: USB 2.0 ▪ VGA, 16 Bit, 1024 x 768 resolution, 17" color monitor (if printing is desired) ▪ Windows compatible graphics-capable printer
Back-up	Fully automatic as well as manual back-up and restore functions
Export function	CSV, LIMS, PDF, multiWin
Method library	field-approved, ready-to-use standard methods for routine applications and selected environmental sum parameters included

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Features	<ul style="list-style-type: none"> ▪ Intuitive user guidance, self-explanatory menu navigation ▪ Self Check System – automatic monitoring, adaptation and regulation of important system parameters ▪ Plug-and-Start technology – automatic identification of active system configuration ▪ Trouble Shooting Assistant, implemented service and maintenance modules ▪ Predictive maintenance – maintenance interval timer ▪ Automatic and manual gas- and power-saving functions, standby, shutdown, gas-off, and automatic wake-up functions ▪ Multitasking – free evaluation of sample data even during running measurements ▪ Special host option allows to control two different multi EA 5100 systems at the same time with the same PC and software ▪ Implemented system performance checks – AQA and daily factor functions ▪ Calibration: single-point, multi-point and multi-range calibration; linear and quadratic regression models, automatic and manual blank correction function, statistical data
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Physical Data (Basic Unit)

Dimensions (W x H x D) (without PC and monitor)	<p>Basic unit (vertical): 513 mm x 464 mm x 551 mm</p> <p>Basic unit incl. automatic boat drive (horizontal): 1073 mm x 464 mm x 551 mm</p> <p>Accessory module (detector resp. gas sampler) without basic unit: 296 mm x 464 mm x 492 mm</p>
Weight (basic unit)	approx. 26 kg
Installation requirements	<p>Ambient temperature: 23 – 35 °C</p> <p>Relative humidity: 10 – 90%</p>
Power requirements	110–230 V (± 5%), 50 – 60 Hz as per IEC 38 and subsequent documents, fuse protection min. 16 A, electrical installations in compliance with VDE 100

The specifications are valid for proper operation of a suited configuration of the analyzer.

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